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10/763,027	01/21/2004	Wolfgang Maus	E-80044	9168

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/763,027
Filing Date: January 21, 2004
Appellant(s): MAUS, WOLFGANG

Alfred K. Dassler
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/29/2010 appealing from the Office action mailed 11/09/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-4 and 6-29 are rejected and pending in the application.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN

REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

It is noted that a typographical error was corrected in the heading of the rejection of claims 1, 7, 28 and 29 in view of Maus (US 5,916,530) where the examiner had originally (in the Final Rejection mailed 11/9/2009) only labeled claim 7 as being rejected by Maus. The text of the rejection, which individually points out how the limitations of claims 1, 7, 28 and 29 are met by the Maus reference, remains the same. This error was also acknowledged by Appellant on page 11 of the Appeal Brief.

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5,486,338	OTA	1-1996
6,245,301	STROOM	6-2001
5,916,530	MAUS	6-1999

MatWeb (Material physical property website)

http://www.matweb.com/search/DataSheet.aspx?MatGUID=0cf4755fe3094810963eaa74fe812895&ckck=1 (11/4/2009)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-4, 6 and 8-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ota et al. (US 5,486,338) as evidenced by Stroom et al. (US 6,245,301) and

http://www.matweb.com/search/DataSheet.aspx?MatGUID=0cf4755fe3094810963eaa74fe812895&ckck=1.

Regarding claims 1, 9, 11, 16, and 25-27, Ota discloses a honeycomb body comprising:

a housing (2);

a matrix (corrugated foils (8) and flat sheets (7), inside housing) having a diameter and connected to said housing (see Figs. 1, 2, 3, 5, 6); and

at least one contraction limiter (5, 9a, 9b, 10, 11) causing an outwardly directed tensile stress in at least one part of said matrix (see Figs. 1, 2, 3, 5, 6) for preventing the average initial diameter of said matrix from decreasing by more than 5% after repeated alternating thermal stresses in the range between 600C and 1050C (after the matrix has been through multiple repeated thermal stresses, caused by startup and shutdown of gas purifying apparatus, the average initial diameter will still be the same. In other words, the initial diameter will increase during heat up and subsequently decrease during cool down, wherein it will return to its initial diameter, therefore the diameter does not decrease at all, but rather stays the same). It should be pointed out that claim 1 is not directed to a process. Rather, it is directed to a honeycomb body. As such, process limitation such as "repeated thermal alternating stresses in the range between 600°C and 1050°C" is not a material limitation and thus should be given little or weight.

In addition, the stainless steel of Ota's matrix has a coefficient of thermal expansion of ~19.5 μm/m°C (see for example, http://www.matweb.com/search/DataSheet.aspx?MatGUID=0cf4755fe3094810963eaa74

fe812895&ckck=1). Using this coefficient of thermal expansion and diameter of a matrix of standard diameter (such as 12.5cm, see US 6,245,301 col. 13 lines 56-59), the increase (and subsequent decrease) in the diameter of the honeycomb matrix would amount to an ~1%.

Regarding claim 2, Ota, as discussed in claim 1 above, further discloses said matrix (8,7) is connected to said housing (3) by said contraction limiter (cushion member (5) and joints (9a)).

Regarding claim 3, Ota, as discussed in claim 1 above, further discloses said contraction limiter (11) has a first end region (11b) connected to said matrix (see Fig. 11) resulting in a connecting region, and a second end region (11a) connected to said housing (2, see Fig. 11) resulting in a fastening region).

Regarding claim 4, Ota, as discussed in claim 1 above, further discloses said contraction limiter (11) and said matrix (3) have a common connecting region (11b, see Fig. 11); and

said matrix (3) has walls (7) connected to one another by joining connections (corrugated foil (8)), the tensile stress being applied through said common connecting region.

Regarding claim 8, Ota, as discussed in claim 1 above, further discloses:

said matrix (3) has a circumference (see Fig. 2); and

said contraction limiter (5, 6 in Fig. 1) is one of a plurality of contraction limiters (see Fig. 10) disposed axially one behind another (see Fig. 1), with an offset with respect to one another in a direction of said circumference of said matrix (see Fig. 11).

Regarding claim 10, Ota, as discussed in claim 1 above, further discloses said matrix is thermally insulated with respect to said housing (via gap between the two structures, see Fig. 2).

Regarding claims 12 and 20, Ota, as discussed in claim 1 above, further discloses said matrix (3) has walls formed of at least partially structured sheet-metal foils (metal honeycomb, see abstract) stacked and/or coiled forming channels through which a gas can flow (honeycomb, see Fig. 3).

Regarding claims 6 and 21-23 Ota, as discussed in claim 1 above, further discloses said contraction limiter (cushion sections 11) and said matrix (3) have a common connecting region (11b), said common connecting region is disposed close to an end side of said matrix (Ota discloses said cushion sections and joining sections are provided over the entire axial length i.e. up to the edge of said matrix, as pictured in Figs. 7 and 8, see col. 5 lines 40-44).

Regarding claim 13, Ota, as discussed in claim 12 above, further discloses said matrix (3) is at least partially surrounded by an outer structured foil (foil (7) see Fig. 2).

Regarding claim 14, Ota, as discussed in claim 12 above, further discloses said sheet-metal foils have a thickness of less than 0.06 mm (.05mm, col. 5 line 50-52).

Regarding claims 17 and 24, Ota, as discussed in claim 1 above, further discloses said contraction limiter (10) has means for preventing crack propagation (see corrugated limiters in Fig. 3 which will expand without cracking).

Regarding claims 15, 18 and 19, while Ota, as set forth in claim 12 above doesn't teach the thickness of the sheet metal of the honeycomb or the density of the cells in the

honeycomb it was well known in the art at the time of the invention that these variables have a direct relationship to the performance of the honeycomb (for example, more cells, thinner walls yields more surface area for catalyst, as implied by Cyron, col. 6 lines 42-58). As such, these dimensions are not considered to confer patentability to the claim. These variables would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed size of the sheet metal and density of the cells cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the size and density of the cells to obtain the desired performance (In re Boesch, 617 F. 2d. 272,205 USPQ 215 (CCPA 1980)). Since it has been held that where general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 223).

Claims 1, 7, 28 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Maus et al. (US 5,916,530).

Regarding claim 1, Maus discloses a honeycomb body, comprising:

a housing (1);

a matrix (2) having an average initial diameter (inherently, the matrix is cylindrical, col. 4 line 63 - col. 5 line 4) and connected to said housing (via 11); and

at least one contraction limiter (11) configured for imparting an outwardly directed tensile stress in at least one part of said matrix (the limiter 11 will inherently provide a

stress to the matrix since it is attached, see col. 5 lines 5-8) for preventing the average initial diameter of said matrix from decreasing by more than 5% after repeated alternating thermal stresses in the range between 600C and 1050C (after the matrix has been through multiple repeated thermal stresses, caused by startup and shutdown of gas purifying apparatus, the average initial diameter will still be the same. In other words, the initial diameter will increase during heat up and subsequently decrease during cooldown, where it will return to its initial diameter, therefore the diameter does not decrease at all, but rather stays the same).

Regarding claim 7, Maus further discloses said matrix (2) and said housing (1) define an annular gap therebetween (see Fig. 3) and surrounding said matrix, and said at least one contraction limiter (11) sealing said annular gap surrounding said matrix (see Fig. 3 and col. 5 lines 9-12).

Regarding claim 28, Maus further discloses said at least one contraction limiter is a single-piece corrugated foil encircling said matrix (see Fig. 3).

Regarding claim 29, Maus further discloses said at least one contraction limiter (11) is affixed to said matrix at a vicinity of a longitudinal end of said matrix (see Fig. 3).

(10) Response to Argument

Responding to each individual argument presented by Appellant:

Claims 1-4, 6, and 8-27 are not anticipated by Ota under 35 U.S.C. §102:

On page 5, Appellant argues that Ota explicitly discloses a cushion member that does not meet the claimed "contraction limiter". More specifically, Appellant states that the "only way"

that Ota can be interpreted as having a contraction limiter would be by constraining expansion and contraction of the honeycomb to impart an outwardly directed tensile.

The examiner respectfully disagrees with this argument. In claim 1, Appellant claims that a contraction limiter imparts an outwardly directed tensile stress on at least one part of the matrix for preventing the average initial diameter of the matrix from decreasing more than 5% after repeated thermal stresses.

As claimed in claim 1, a matrix has an average initial diameter that is, for sake of the argument, XX cm. After repeated thermal stresses, the average initial diameter of the matrix is still XX cm. The diameter of the matrix after the thermal stresses is no longer the "initial diameter" as it has now been changed. Furthermore, the "contraction limiters" of Ota do indeed impart a tensile stress to the matrix of Ota. See Fig. 5 of Ota which illustrates a matrix (3) that is suspended in the housing (2) by "contraction limiters" (11a, 11b, 11c). Due to the gravitation pull of the matrix, the contraction limiters (11a, 11b, 11c) will impart a tensile stress "to at least one part of said matrix" in order to keep the matrix suspended in the housing, as depicted in Fig. 5.

In other words, Appellant is not claiming that the contraction limiter do anything other than imparting a tensile stress to the matrix. As the initial diameter (XX cm) will always remain the initial diameter (XX cm) regardless of how many thermal stresses the matrix goes through. After the thermal stresses, the examiner takes the position that the diameter of the matrix is no longer the "initial diameter" but rather the "post thermal stress diameter". The "initial diameter of the matrix" is still the same value (XX cm) that it was prior to the thermal stresses.

Appellants arguments presented on page 6 which state that the evidentiary references that were presented in the rejection of claim 1 were invalid. The examiner agrees with this argument. However, such references were not necessary to prove anticipation under 35 USC §102 and the examiner still holds that the claim, in its current form, is fully anticipated by the Ota reference (as discussed above).

On pages 7-9, Appellants argue that the examiner did not show inherency that the contraction limiters of Ota exert and outward force on the honeycomb matrix. The examiner respectfully disagrees with this argument. As stated in the MPEP, and cited by Appellant, "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." It is the examiner's position that one of ordinary skill in the art would recognize the contraction limiters of Ota (11a, 11b, 11c) would necessarily be exerting an outward force on at least one part of the matrix due to weight of the matrix and the fact that it is suspended in the housing (2). To make this more clear, the examiner points to the Fig. 5 of Ota. The specific contraction limiter that is designated 11b in this figure is inherently exerting and upward/outward force on the matrix.

Claims 1 and 7 are not anticipated by Maus under 35 U.S.C. §102:

On pages 10-15, Appellants argue that the examiner did not show inherency that the contraction limiters (11a, 11b, 11c) of Maus exert and outward force on the honeycomb matrix. The examiner respectfully disagrees with this argument. As stated in the MPEP, and cited by Appellant, "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would

be so recognized by persons of ordinary skill." It is the examiner's position that one of ordinary skill in the art would recognize the contraction limiters of Maus (11a, 11b, 11c) would necessarily be exerting an outward force on at least one part of the matrix due to weight of the matrix and the fact that it is suspended in the housing (see Fig. 3). To make this more clear, the examiner points to the Fig. 3 of Maus. The specific contraction limiter that is designated 11c in this figure is inherently exerting and upward/outward force on the matrix in order to support the weight of the matrix.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/M. J. M./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795

Conferees:

Alexa D. Neckel /A.D.N./

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